

FEB 17 1982

DMS QPL 1762 ^{Type} BA
Lubricants, Dry Film



E/M LUBRICANTS, INC. • P. O. BOX 2200, HIGHWAY 52 N.W. • WEST LAFAYETTE, INDIANA 47908
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Reply to: 6940 Farmdale Avenue
North Hollywood, CA 91605

April 22, 1977

Mr. M. J. Veneroso
Department C1-726 (52-11)
Materials Handling & Packaging Engineering
Douglas Aircraft Company
3855 Lakewood Boulevard
Long Beach, CA 90846

Dear Mr. Veneroso:

Thank you for your letter of April 11th requesting complete information on the following products:

Everlube 620C	Everlube 811
Tempa-Dot	Everlube 810
Formkote T-50	

We are pleased to provide the following information for your usage in transporting our products. The following information should be sufficient for your usage.

Everlube 620C

Red Label Item - Flash Point: 36°F Closed Cup - Composition: Paint, Enamel, Lacquer, Stain, Shellac, Varnish, Aluminum, Bronze, Gold, Wood Filler, Liquid and Lacquer Base, Liquid Paint. This product is a resin bonded solid film lubricant containing molybdenum disulfide, antimony trioxide, modified phenolic resin binders, ethyl alcohol, and toluene.

Tempa-Dot

The enclosed technical data sheet should answer your questions concerning this product which would be listed under the same category as Everlube 620C.

Formkote T-50

The same as Everlube 620C, except the flash point is 38°F Closed Cup, and this product contains silicone resin, graphite, and toluene.

(Continued)

Mr. M. J. Veneroso
Douglas Aircraft Company
Page Two
April 22, 1977

Everlube 811

A water base inorganic solid film lubricant with no flash point, and this product contains sodium silicate binders, molybdenum disulfide, graphite, and distilled water.

Everlube 810

The same as Everlube 620C, except the flash point is 48°F Closed Cup, and this product contains a modified silicone resin binder, molybdenum disulfide, graphite, and toluene.

Should you desire OSHA material safety data sheets, please supply these to us and we will fill them out. As always, if we can be of further assistance, please contact us.

Sincerely,

E/M LUBRICANTS, INC.


R. L. Weible
Vice President

RLW:mr
Encls.



E/M LUBRICANTS, INC.
P.O. BOX 2200, HIGHWAY 52 N.W.
WEST LAFAYETTE, INDIANA 47906

QPL 1762-6A

Technical Data

S P E C I F I C A T I O N

EVERLUBE 811

(811-B, 811-B2, 811-2, 811-3, 812, 823)

APPROVED MIL-L-81329 (AS)

EXTREME TEMPERATURE DRY LUBRICANT

DESCRIPTION — This specification covers a dry, bonded lubricative coating to be used as an extreme temperature and extreme pressure lubricant. This coating is known to function well at room temperature and through a wide range as shown in paragraph (5). It exhibits excellent and improved heat soak characteristics as well as wear life at extreme temperatures. It has other features that make it superior to existing products. It does not require the extreme temperature cure that is necessary with ceramic or silicone binders. It can be operated above its cure temperature without loss of adhesion due to softening of the binder. The function of failure is most desirable as this is evidenced by a slow steady rise in friction. The coating will not become abrasive or in any way cause catastrophic failure.

USE — This coating should be used as an anti-friction coating and is especially advantageous in temperature and pressure ranges that lie beyond the capabilities of conventional lubricants or where the presence of such lubricants is objectionable. It is further recommended for use in assemblies that must endure extended storage and as a permanent anti-seize coating.

APPEARANCE — In its finished form the coating will provide a black matte finish. It will be tightly bonded to the surface and will be free of cracks or blisters.

THICKNESS — The finished coating will have a single surface thickness of .0004" \pm .0001". Recommended thickness for bearings is .0002".

TEMPERATURE RANGE — This coating is intended for use in a wide temperature range. It is used from -365°F to $+1200^{\circ}\text{F}$. Because it is totally inorganic in nature and because of the established manufacturing controls it is non-impact sensitive in cryogenic applications.

ADHESION — When applied according to this specification, the coating will be tightly adhered to the surface. It is insoluble in solvents, conventional fuels, greases and will withstand LOX cleaning. —LOX Compatible.

APPLICATION — The regular three steps are involved in the application of Everlube 811.

- (a) Surface preparation. This is done by cleaning and irregularizing the surface so that the optimum condition for bonding will exist when application takes place. Stainless steel should be grit blasted and passivated, plating should be grit blasted. Blast operations must be controlled so that plating is not removed, merely roughened slightly. Aluminum should be pretreated according to existing standards, anodize per MIL-A-8625 or chemical conversion coat MIL-C-5541.
- (b) Coating can be accomplished by spray, brush or dip, and should take place shortly after the surface treatment. Everlube 811 comes ready for application. Sample panels should be prepared and measured so that a thickness of .0004" \pm .0001", or thickness required on applicable drawing, will be produced on the coated part. Parts to be recoated should be flash baked before second coat or before they are turned over or handled.
- (c) Curing is accomplished after the vehicle has evaporated from the coating. This will take about 15 minutes. Cure cycle — air dry followed by 2 hours at 150°F ., then 2 hours at 400°F . Reduce to 300°F . on aluminum alloys.

INSPECTION — After processing, coated parts should be inspected for adhesion and for appearance by visual means and for thickness by micrometer or magna gauge.

CERTIFICATION — A document showing part name, number, quantity, product number, date and location of application and authorized signature should accompany each lot of parts.

SOURCE — Everlube 811 is available from E/M Lubricants, Inc., 6940 Farmdale Avenue, North Hollywood, Calif., and its authorized applicators.

EXTREME HIGH TEMPERATURE **811** Inorganic

EVERLUBE 811

A composition of:	Laminar solids (MoS ₂ , graphite), sodium silicate binder, and water.
Temperature Range:	Used in temperature ranges of -400°F to 1200°F. This coating has been used for cryogenic purposes at extremely low temperatures and in extremely high temperature applications.
Bearing Loads:	May be used in loads up to 100,000 PSI. Has performed at very extreme loads for a substantial length of time.
Radiation Stability:	Has been exposed in tests in gamma radiation to 10 ¹² CRG/GC without loss to wear life and more severe exposures.
Vacuum Stability:	Tested in anti-friction bearings in vacuum to 10 ⁻⁹ mm without loss to wear life. Weight loss negligible.
LOX Compatibility:	Has been impact tested many times by several prime contractors at 73 ft. lb. LOX. It is approved by the National Aeronautics & Space Adm. and the Atomic Energy Commission for this purpose.

RESISTANCE TO FLUIDS

24 hour immersion in fluids specified in Mil-L-8937

RESISTANCE TO SELECTED CHEMICALS

Nitrogen gas	24 hr. @ 70°F
Helium gas	24 hr. @ 70°F
Unsymmetrical dimethylhydrazine	24 hr. immersion @ 70°F
Monomethyl hydrazine	24 hr. in vapor @ 70°F
Boron Trichloride	Exposure for 24 hrs. to am. Potash 99.9%
Potassium Hydroxide	24 hr. immersion test

RESISTANCE

Will not wash off afterwards

EFFECT

No change
No change
No change
No change
Slight discoloration
Insignificant damage

EVERLUBE'S RESISTANCE TO SELECTED CHEMICALS & GASSES

CHEMICAL TESTED

811, 812,
811-B, 811-2

1. Boron Trichloride (24 hr. Am. Potash 99.9%)	NC
2. Beta Propiolactone (5% in Acetone 1 hr.)	NC
3. Ethyleneimine (1% in M. Alcohol 1 hr.)	NC
4. Ethylene Oxide-Freon 12 (24 hr. 12% ethylene oxide & 88% trichlorofluoromethane)	NC
5. Formaldehyde (37% in methanol 1 hr.)	NC
6. Helium Gas (72 hr. exposure)	NC
7. Hydrogen Peroxide (24 hr. immersion)	Slight Decomposition
8. Potassium Hydroxide (24 hr. immersion)	NC
9. Monomethyl Hydrazine (24 hr. immersion)	NC
10. Nitrogen Gas (72 hr. exposure)	NC
11. Nitrogen Tetroxide N ₂ O ₄ (24 hrs. in saturated vapor @ 70°F)	Slight Blistering
12. Unsymmetrical Dimethylhydrazine UDMH (24 hr. immersion @ 70°F)	NC
13. Inhibited Red Fuming Nitric Acid (IRFNA) (24 hr. exposure)	Blistering
14. Nitrogen Tetroxide N ₂ O ₄ (Splash Test)	Slight Blistering
15. Ammonium Hydroxide (58%)	NC

All of these tests were performed using processed panels of the following composition and surface preparation. ANODIZED. MIL-A-8625, Type 2, 2024T4 aluminum: PHOSPHATE TREATED, MIL-P-16232, Type M, 4130 steel; GRITBLASTED AND PASSIVATED, 301 corrosion resistance steel. All of the tests were performed for the period of time listed above.

Reference #7—Hydrogen Peroxide

Everlube products which are not affected by this chemical are Everlube 621, 624, and 823.

Reference #11—Nitrogen Tetroxide

Everlube 405 has excellent resistance to this chemical.

Reference #13—IRFNA

Everlube 405 has excellent resistance to this chemical.

Reference #14—N₂O₄ (Splash Test)

Everlube 1329, 405 and 823 have excellent resistance to this chemical.